OKADA et al.
Serial No. 09/722,410
Response to Office Action dated May 12, 2003

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in this application.

Listing of Claims:

Claims 1-86 (Canceled)

Claim 87 (Currently Amended):   A ~~pluggable~~ memory cartridge for use in a <u>hand-held</u> system for playing video games by displaying graphical information based at least in part on user interaction provided through operation of at least one user-manipulable control, <u>the hand-held</u> ~~said~~ system including a main unit having a cartridge insertion port that receives <u>the</u> ~~said~~ ~~pluggable~~ memory cartridge, <u>the</u> ~~said~~ main unit including an object attribute memory (OAM) storage, a color palette random access memory storage and a video random access memory storage, <u>the</u> ~~said~~ memory cartridge including:

a housing dimensioned to be at least partially inserted into <u>the</u> ~~said~~ port;

an electrical connector that electrically connects <u>the</u> ~~said~~ cartridge to the main unit; and

at least one non-volatile memory device disposed within <u>the</u> ~~said~~ housing, <u>the at least one</u> ~~said~~ non-volatile memory device being electrically connected to <u>the</u> ~~said~~ electrical connector, <u>the</u> <u>at least one non-volatile</u> ~~said~~ memory device storing executable instructions for:

(a)   writing up to 128 different 48-bit moving object definitions to the object attribute memory (OAM) storage;

(b)   writing up to 512 different 15-bit color values to the color palette random access memory storage;

(c)   writing at least one of moving object <u>data and</u> ~~definitions,~~ background <u>data</u> ~~character definitions and bitmapped graphics~~ to the video random access memory storage; and

OKADA et al.
Serial No. 09/722,410
Response to Office Action dated May 12, 2003

(d)   generating a game display that is responsive to <u>the</u> <s>said</s> user-manipulable control and is based at least in part on the contents of the object attribute memory storage, the color palette random access memory storage, and the video random access memory storage,

<u>wherein the background data is selectively written to the video random access memory storage as either character data or pixel data so that backgrounds of the game display are selectively rendered in a character mode or in a bitmap mode.</u>

Claim 88 (Currently Amended):   The cartridge of claim 87, wherein <u>the</u> <s>said</s> at least one non-volatile memory device stores instructions controlling storage, within <u>the</u> <s>said</s> video random access memory storage, of <s>bitmapped</s> color information for the simultaneous display of up to 32,768 different colors <u>in the bitmap mode</u>.

Claim 89 (Currently Amended):   The cartridge of claim 87, wherein <u>the</u> <s>said</s> at least one non-volatile memory <u>device</u> stores instructions that control reference to the color palette random access memory <u>storage</u> <s>as a color lookup table for bitmapped graphics stored in said video random access memory storage</s> to provide simultaneous display of up to 256 different colors <u>in the bitmap mode</u>.

Claim 90 (Currently Amended):   <u>A memory</u> <s>The</s> cartridge <u>for use in a hand-held system for playing video games by displaying graphical information based at least in part on user interaction provided through operation of at least one user-manipulable control, the hand-held system including a main unit having a cartridge insertion port that receives the memory cartridge, the main unit including an object attribute memory (OAM) storage, a color palette random access memory storage and a video random access memory storage</u> <s>of claim 87</s>, the memory cartridge including:
<u>a housing dimensioned to be at least partially inserted into the port;</u>
<u>an electrical connector that electrically connects the cartridge to the main unit; and</u>

OKADA et al.
Serial No. 09/722,410
Response to Office Action dated May 12, 2003

at least one non-volatile memory device disposed within the housing, the at least one non-volatile memory device being electrically connected to said electrical connector, the at least one non-volatile memory device storing executable instructions for:

(a)   writing up to 128 different 48-bit moving object definitions to the object attribute memory (OAM) storage;

(b)   writing up to 512 different 15-bit color values to the color palette random access memory storage;

(c)   writing at least one of moving object data and background data to the video random access memory storage; and

(d)   generating a game display that is responsive to the user-manipulable control and is based at least in part on the contents of the object attribute memory storage, the color palette random access memory storage, and the video random access memory storage,

wherein the at least one non-volatile memory device stores instructions that address the video random access memory storage at one or more addresses in an ~~beginning at~~ address range from 06000000h to 06017FFFh.

Claim 91 (Currently Amended):   A memory ~~The~~ cartridge for use in a hand-held system for playing video games by displaying graphical information based at least in part on user interaction provided through operation of at least one user-manipulable control, the hand-held system including a main unit having a cartridge insertion port that receives the memory cartridge, the main unit including an object attribute memory (OAM) storage, a color palette random access memory storage and a video random access memory storage ~~of claim 87~~, the memory cartridge including:

a housing dimensioned to be at least partially inserted into the port;

an electrical connector that electrically connects the cartridge to the main unit; and

at least one non-volatile memory device disposed within the housing, the at least one non-volatile memory device being electrically connected to said electrical connector, the at least one non-volatile memory device storing executable instructions for:

OKADA et al.
Serial No. 09/722,410
Response to Office Action dated May 12, 2003

(a)   writing up to 128 different 48-bit moving object definitions to the object attribute memory (OAM) storage;

(b)   writing up to 512 different 15-bit color values to the color palette random access memory storage;

(c)   writing at least one of moving object data and background data to the video random access memory storage; and

(d)   generating a game display that is responsive to the user-manipulable control and is based at least in part on the contents of the object attribute memory storage, the color palette random access memory storage, and the video random access memory storage,

wherein the at least one non-volatile memory device stores instructions that access two allocated frame buffers in the video random access memory storage to provide full motion video.

Claim 92 (Currently Amended):   The cartridge of claim 87, wherein the said at least one non-volatile memory device stores instructions that specify up to 128 different moving object definitions providing moving object characters of up to 12 different sizes.

Claim 93 (Currently Amended):   The cartridge of claim 87, wherein the said at least one non-volatile memory device stores instructions that write rotation/scaling parameters to the object attribute memory storage.

Claim 94 (Currently Amended):   The cartridge of claim 87, wherein the said at least one non-volatile memory device stores instructions that write mosaic information to the object attribute memory storage.

Claim 95 (Currently Amended):   The cartridge of claim 87, wherein the said at least one non-volatile memory device stores instructions that control display of plural display windows simultaneously.

OKADA et al.
Serial No. 09/722,410
Response to Office Action dated May 12, 2003

Claim 96 (Currently Amended):   The cartridge of claim 87, wherein the said at least one non-volatile memory device stores instructions that control the scrolling of plural background screens independently.

Claim 97 (Currently Amended):   The cartridge of claim 87, wherein the said at least one non-volatile memory device stores instructions that control the rotation of plural background screens independently.

Claim 98 (Currently Amended):   A memory The cartridge for use in a hand-held system for playing video games by displaying graphical information based at least in part on user interaction provided through operation of at least one user-manipulable control, the hand-held system including a main unit having a cartridge insertion port that receives the memory cartridge, the main unit including an object attribute memory (OAM) storage, a color palette random access memory storage and a video random access memory storage of claim 87, the memory cartridge including:

a housing dimensioned to be at least partially inserted into the port;

an electrical connector that electrically connects the cartridge to the main unit; and

at least one non-volatile memory device disposed within the housing, the at least one non-volatile memory device being electrically connected to the electrical connector, the at least one non-volatile memory device storing executable instructions for:

(a)   writing up to 128 different 48-bit moving object definitions to the object attribute memory (OAM) storage;

(b)   writing up to 512 different 15-bit color values to the color palette random access memory storage;

(c)   writing at least one of moving object data and background data to the video random access memory storage; and

(d)   generating a game display that is responsive to the user-manipulable control and is based at least in part on the contents of the object attribute memory storage, the color palette random access memory storage, and the video random access memory storage,

OKADA et al.
Serial No. 09/722,410
Response to Office Action dated May 12, 2003

wherein said at least one non-volatile memory <u>device</u> stores instructions that control the alpha blending of plural display windows independently.

Claim 99 (Currently Amended): <u>A memory</u> ~~The~~ cartridge <u>for use in a hand-held system for playing video games by displaying graphical information based at least in part on user interaction provided through operation of at least one user-manipulable control, the hand-held system including a main unit having a cartridge insertion port that receives the memory cartridge, the main unit including an object attribute memory (OAM) storage, a color palette random access memory storage and a video random access memory storage</u> ~~of claim 87~~, <u>the memory cartridge including:</u>

 <u>a housing dimensioned to be at least partially inserted into the port;</u>

 <u>an electrical connector that electrically connects the cartridge to the main unit; and</u>

 <u>at least one non-volatile memory device disposed within the housing, the at least one non-volatile memory device being electrically connected to the electrical connector, the at least one non-volatile memory device storing executable instructions for:</u>

 <u>(a) writing up to 128 different 48-bit moving object definitions to the object attribute memory (OAM) storage;</u>

 <u>(b) writing up to 512 different 15-bit color values to the color palette random access memory storage;</u>

 <u>(c) writing at least one of moving object data and background data to the video random access memory storage; and</u>

 <u>(d) generating a game display that is responsive to the user-manipulable control and is based at least in part on the contents of the object attribute memory storage, the color palette random access memory storage, and the video random access memory storage,</u>

 wherein <u>the</u> ~~said~~ at least one non-volatile memory <u>device</u> stores instructions that control the fade-in/fade-out of plural display windows independently.

OKADA et al.
Serial No. 09/722,410
Response to Office Action dated May 12, 2003

Claim 100 (Currently Amended): The cartridge of claim 87, wherein the ~~said~~ at least one non-volatile memory <u>device</u> stores instructions that control the upper-left and lower-right display coordinates of plural display windows independently.

Claim 101 (Currently Amended): <u>A memory</u> ~~The~~ cartridge <u>for use in a hand-held system for playing video games by displaying graphical information based at least in part on user interaction provided through operation of at least one user-manipulable control, the hand-held system including a main unit having a cartridge insertion port that receives the memory cartridge, the main unit including an object attribute memory (OAM) storage, a color palette random access memory storage and a video random access memory storage</u> ~~of claim 87~~, <u>the memory cartridge including:</u>

<u>a housing dimensioned to be at least partially inserted into the port;</u>

<u>an electrical connector that electrically connects the cartridge to the main unit; and</u>

<u>at least one non-volatile memory device disposed within the housing, the at least one non-volatile memory device being electrically connected to the electrical connector, the at least one non-volatile memory device storing executable instructions for:</u>

<u>(a) writing up to 128 different 48-bit moving object definitions to the object attribute memory (OAM) storage;</u>

<u>(b) writing up to 512 different 15-bit color values to the color palette random access memory storage;</u>

<u>(c) writing at least one of moving object data and background data to the video random access memory storage; and</u>

<u>(d) generating a game display that is responsive to the user-manipulable control and is based at least in part on the contents of the object attribute memory storage, the color palette random access memory storage, and the video random access memory storage,</u>

wherein <u>the</u> ~~said~~ at least one non-volatile memory <u>device</u> stores instructions that control performance of arithmetic operations on two selected surfaces and processing for up to 16 levels of semi-transparency.

- 9 -

OKADA et al.
Serial No. 09/722,410
Response to Office Action dated May 12, 2003

Claims 102-114 (Canceled)

Claim 115 (Currently Amended): The cartridge of claim 87, wherein the ~~said~~ at least one non-volatile memory <u>device</u> stores instructions that control display of plural background screens simultaneously.

Claim 116 (New): The cartridge of claim 87, wherein the at least one non-volatile memory device stores at least one further instruction for accessing a predetermined 16-bit memory location, wherein

bit position 0 of the memory location specifies vertical blanking interval status;

bit position 1 of the memory location specifies horizontal blanking interval status;

bit position 2 of the memory location specifies vertical counter matching or non-matching;

bit position 3 of the memory location specifies whether vertical blanking interval interrupts are enabled;

bit position 4 of the memory location specifies whether horizontal blanking interval interrupts are enabled; and

bit position 5 of the memory location specifies whether vertical counter matching interrupts are enabled.

Claim 117 (New): The cartridge of claim 116, wherein the predetermined memory location is at address 004h.

Claim 118 (New): The cartridge of claim 87, wherein the at least one non-volatile memory device stores at least one further instruction for accessing a predetermined 16-bit memory location, wherein

bit position 3 of the memory location specifies whether vertical blanking interval interrupts are enabled;

OKADA et al.
Serial No. 09/722,410
Response to Office Action dated May 12, 2003

bit position 4 of the memory location specifies whether horizontal blanking interval interrupts are enabled; and

bit position 5 of the memory location specifies whether vertical counter matching interrupts are enabled.

Claim 119 (New):   The cartridge of claim 118, wherein the predetermined memory location is at address 004h.

Claim 120 (New):   The cartridge of claim 87, wherein the at least one non-volatile memory device stores at least one further instruction for accessing a predetermined 16-bit memory location, wherein

bit positions 0-2 of the memory location specify a background mode;

bit position 4 of the memory location specifies a display frame selector for selecting between two different frame buffers;

bit position 5 of the memory location specifies whether to render objects during horizontal blanking intervals;

bit position 6 of the memory location specifies a control bit for selecting between one-dimensional and two-dimensional object character mapping;

bit positions 8-12 of the memory location specify display of four different background screens and display of moving objects;

bit positions 13-14 of the memory location select display of two different windows; and

bit position 15 of the memory location selects display of an object window.

Claim 121 (New):   The cartridge of claim 120, wherein the predetermined memory location is at address 0000h.

Claim 122 (New):   The cartridge of claim 87, wherein the at least one non-volatile memory device stores at least one further instruction for accessing a predetermined 16-bit memory location, wherein

- 11 -

OKADA et al.
Serial No. 09/722,410
Response to Office Action dated May 12, 2003

bit positions 0-1 of the memory location specify one of four background priority levels;

bit positions 2-3 of the memory location specify a character base block value;

bit position 6 of the memory location specifies a mosaic enable/disable flag;

bit position 7 of the memory location selects between a 16 color, 16 palette color mode and a 256 color, one palette color mode;

bit positions 8-12 of the memory location specify a screen base block; and

bit positions 14-15 of the memory location specify a screen size.

Claim 123 (New):   The cartridge of claim 122, wherein the predetermined memory location is at one or the other of address 008h and address 00Ah.

Claim 124 (New):   The cartridge of claim 87, wherein the at least one non-volatile memory device stores at least one further instruction for accessing a predetermined 16-bit memory location, wherein

bit positions 0-3 of the memory location specify a background character mosaic horizontal size;

bit positions 4-7 of the memory location specify a background character mosaic vertical size;

bit positions 8-11 of the memory location specify a moving object character mosaic horizontal size; and

bit positions 12-15 of the memory location specify a moving object character mosaic vertical size,

wherein the mosaic sizes specify how many dots in an original character should be replaced by a virtual character.

Claim 125 (New):   The cartridge of claim 124, wherein the predetermined memory location is at address 04Ch.

- 12 -

OKADA et al.
Serial No. 09/722,410
Response to Office Action dated May 12, 2003

Claim 126 (New):   The cartridge of claim 87, wherein the at least one non-volatile memory device stores at least one further instruction for controlling rotation and/or scaling, the at least one further instruction writing rotation/scaling data to at least one register including:

a 12-bit value specifying an x-coordinate reference starting point;

a 12-bit value specifying a y-coordinate reference starting point;

a 16-bit value specifying a distance of movement in the x-direction; and

a 16-bit value specifying a distance of movement in the y-direction.

Claim 127 (New):   The cartridge of claim 87, wherein the at least one non-volatile memory device stores at least one further instruction for accessing a predetermined 16-bit memory location, wherein

bit positions 0-4 of the memory location specify whether to display any or all of four backgrounds and a moving object in a first display window;

bit position 5 of the memory location specifies whether to enable color special effects within the first display window;

bit positions 8-12 of the memory location specify whether to display any or all of the four backgrounds and the moving object within a second display window different than the first display window; and

bit position 13 of the memory location specifies whether to enable color special effects within the second display window.

Claim 128 (New):   The cartridge of claim 90, wherein the at least one non-volatile memory device stores at least one further instruction for accessing a predetermined 16-bit memory location, wherein

bit position 0 of the memory location specifies vertical blanking interval status;

bit position 1 of the memory location specifies horizontal blanking interval status;

bit position 2 of the memory location specifies vertical counter matching or non-matching;

OKADA et al.
Serial No. 09/722,410
Response to Office Action dated May 12, 2003

bit position 3 of the memory location specifies whether vertical blanking interval interrupts are enabled;

bit position 4 of the memory location specifies whether horizontal blanking interval interrupts are enabled; and

bit position 5 of the memory location specifies whether vertical counter matching interrupts are enabled.

Claim 129 (New):   The cartridge of claim 128, wherein the predetermined memory location is at address 004h.

Claim 130 (New):   The cartridge of claim 90, wherein the at least one non-volatile memory device stores at least one further instruction for accessing a predetermined 16-bit memory location, wherein

bit position 3 of the memory location specifies whether vertical blanking interval interrupts are enabled;

bit position 4 of the memory location specifies whether horizontal blanking interval interrupts are enabled; and

bit position 5 of the memory location specifies whether vertical counter matching interrupts are enabled.

Claim 131 (New):   The cartridge of claim 130, wherein the predetermined memory location is at address 004h.

Claim 132 (New):   The cartridge of claim 90, wherein the at least one non-volatile memory device stores at least one further instruction for accessing a predetermined 16-bit memory location, wherein

bit positions 0-2 of the memory location specify a background mode;

bit position 4 of the memory location specifies a display frame selector for selecting between two different frame buffers;

- 14 -

OKADA et al.
Serial No. 09/722,410
Response to Office Action dated May 12, 2003

bit position 5 of the memory location specifies whether to render objects during horizontal blanking intervals;

bit position 6 of the memory location specifies a control bit for selecting between one-dimensional and two-dimensional object character mapping;

bit positions 8-12 of the memory location specify display of four different background screens and display of moving objects;

bit positions 13-14 of the memory location select display of two different windows; and

bit position 15 of the memory location selects display of an object window.

Claim 133 (New):   The cartridge of claim 132, wherein the predetermined memory location is at address 0000h.

Claim 134 (New):   The cartridge of claim 90, wherein the at least one non-volatile memory device stores at least one further instruction for accessing a predetermined 16-bit memory location, wherein

bit positions 0-1 of the memory location specify one of four background priority levels;

bit positions 2-3 of the memory location specify a character base block value;

bit position 6 of the memory location specifies a mosaic enable/disable flag;

bit position 7 of the memory location selects between a 16 color, 16 palette color mode and a 256 color, one palette color mode;

bit positions 8-12 of the memory location specify a screen base block; and

bit positions 14-15 of the memory location specify a screen size.

Claim 135 (New):   The cartridge of claim 134, wherein the predetermined memory location is at one or the other of address 008h and address 00Ah.

Claim 136 (New):   The cartridge of claim 90, wherein the at least one non-volatile memory device stores at least one further instruction for accessing a predetermined 16-bit memory location, wherein

OKADA et al.
Serial No. 09/722,410
Response to Office Action dated May 12, 2003

bit positions 0-3 of the memory location specify a background character mosaic horizontal size;

bit positions 4-7 of the memory location specify a background character mosaic vertical size;

bit positions 8-11 of the memory location specify a moving object character mosaic horizontal size; and

bit positions 12-15 of the memory location specify a moving object character mosaic vertical size,

wherein the mosaic sizes specify how many dots in an original character should be replaced by a virtual character.

Claim 137 (New):   The cartridge of claim 136, wherein the predetermined memory location is at address 04Ch.

Claim 138 (New):   The cartridge of claim 90, wherein the at least one non-volatile memory device stores at least one further instruction for controlling rotation and/or scaling, the at least one further instruction writing rotation/scaling data to at least one register including:

a 12-bit value specifying an x-coordinate reference starting point;

a 12-bit value specifying a y-coordinate reference starting point;

a 16-bit value specifying a distance of movement in the x-direction; and

a 16-bit value specifying a distance of movement in the y-direction.

Claim 139 (New):   The cartridge of claim 90, wherein the at least one non-volatile memory device stores at least one further instruction for accessing a predetermined 16-bit memory location, wherein

bit positions 0-4 of the memory location specify whether to display any or all of four backgrounds and a moving object in a first display window;

bit position 5 of the memory location specifies whether to enable color special effects within the first display window;

OKADA et al.
Serial No. 09/722,410
Response to Office Action dated May 12, 2003

bit positions 8-12 of the memory location specify whether to display any or all of the four

backgrounds and the moving object within a second display window different than the first

display window; and

bit position 13 of the memory location specifies whether to enable color special effects

within the second display window.

Claim 140 (New):   A memory for use with a hand-held system for playing video

games by displaying graphical information based at least in part on user interaction provided

through operation of at least one user-manipulable control, the hand-held system including an

object attribute memory (OAM) storage, a color palette random access memory storage and a

video random access memory storage, the memory storing executable instructions for:

(a)   writing up to 128 different 48-bit moving object definitions to the object attribute

memory (OAM) storage;

(b)   writing up to 512 different 15-bit color values to the color palette random access

memory storage;

(c)   writing at least one of moving object data and background data to the video

random access memory storage; and

(d)   generating a game display that is responsive to the user-manipulable control and

is based at least in part on the contents of the object attribute memory storage, the color palette

random access memory storage, and the video random access memory storage,

wherein background data is selectively written to the video random access memory

storage as either character data or pixel data so that backgrounds of the game display are

selectively rendered in a character mode or in a bitmap mode.

Claim 141 (New):   The memory of claim 140, wherein the memory stores at least one

further instruction for accessing a predetermined 16-bit memory location, wherein

bit position 0 of the memory location specifies vertical blanking interval status;

bit position 1 of the memory location specifies horizontal blanking interval status;

OKADA et al.
Serial No. 09/722,410
Response to Office Action dated May 12, 2003

bit position 2 of the memory location specifies vertical counter matching or non-matching;

bit position 3 of the memory location specifies whether vertical blanking interval interrupts are enabled;

bit position 4 of the memory location specifies whether horizontal blanking interval interrupts are enabled; and

bit position 5 of the memory location specifies whether vertical counter matching interrupts are enabled.

Claim 142 (New): The memory of claim 141, wherein the predetermined memory location is at address 004h.

Claim 143 (New): The memory of claim 140, wherein the memory stores at least one further instruction for accessing a predetermined 16-bit memory location, wherein

bit position 3 of the memory location specifies whether vertical blanking interval interrupts are enabled;

bit position 4 of the memory location specifies whether horizontal blanking interval interrupts are enabled; and

bit position 5 of the memory location specifies whether vertical counter matching interrupts are enabled.

Claim 144 (New): The memory of claim 143, wherein the predetermined memory location is at address 004h.

Claim 145 (New): The memory of claim 140, wherein the memory stores at least one further instruction for accessing a predetermined 16-bit memory location, wherein

bit positions 0-2 of the memory location specify a background mode;

bit position 4 of the memory location specifies a display frame selector for selecting between two different frame buffers;

OKADA et al.
Serial No. 09/722,410
Response to Office Action dated May 12, 2003

bit position 5 of the memory location specifies whether to render objects during horizontal blanking intervals;

bit position 6 of the memory location specifies a control bit for selecting between one-dimensional and two-dimensional object character mapping;

bit positions 8-12 of the memory location specifies display of four different background screens and display of moving objects;

bit positions 13-14 of the memory location select display of two different windows; and

bit position 15 of the memory location selects display of an object window.

Claim 146 (New):   The memory of claim 145, wherein the predetermined memory location is at address 0000h.

Claim 147 (New):   The memory of claim 140, wherein the memory stores at least one further instruction for accessing a predetermined 16-bit memory location, wherein

bit positions 0-1 of the memory location specify one of four background priority levels;

bit positions 2-3 of the memory location specify a character base block value;

bit position 6 of the memory location specifies a mosaic enable/disable flag;

bit position 7 of the memory location selects between a 16 color, 16 palette color mode and a 256 color, one palette color mode;

bit positions 8-12 of the memory location specify a screen base block; and

bit positions 14-15 of the memory location specify a screen size.

Claim 148 (New):   The memory of claim 147, wherein the predetermined memory location is at one or the other of address 008h and address 00Ah.

Claim 149 (New):   The memory of claim 140, wherein the memory stores at least one further instruction for accessing a predetermined 16-bit memory location, wherein

bit positions 0-3 of the memory location specify a background character mosaic horizontal size;

OKADA et al.
Serial No. 09/722,410
Response to Office Action dated May 12, 2003

bit positions 4-7 of the memory location specify a background character mosaic vertical size;

bit positions 8-11 of the memory location specify a moving object character mosaic horizontal size; and

bit positions 12-15 of the memory location specify a moving object character mosaic vertical size,

wherein the mosaic sizes specify how many dots in an original character should be replaced by a virtual character.

Claim 150 (New): The memory of claim 149, wherein the predetermined memory location is at address 04Ch.

Claim 151 (New): The memory of claim 140, wherein the memory stores at least one further instruction for controlling rotation and/or scaling, the at least one further instruction writing rotation/scaling data to at least one register including:

a 12-bit value specifying an x-coordinate reference starting point;

a 12-bit value specifying a y-coordinate reference starting point;

a 16-bit value specifying a distance of movement in the x-direction; and

a 16-bit value specifying a distance of movement in the y-direction.

Claim 152 (New): The memory of claim 140, wherein the memory stores at least one further instruction for accessing a predetermined 16-bit memory location, wherein

bit positions 0-4 of the memory location specify whether to display any or all of four backgrounds and a moving object in a first display window;

bit position 5 of the memory location specifies whether to enable color special effects within the first display window;

bit positions 8-12 of the memory location specify whether to display any or all of the four backgrounds and the moving object within a second display window different than the first display window; and

OKADA et al.
Serial No. 09/722,410
Response to Office Action dated May 12, 2003

bit position 13 of the memory location specifies whether to enable color special effects within the second display window.

Claim 153 (New):   A memory for use with a hand-held system for playing video games by displaying graphical information based at least in part on user interaction provided through operation of at least one user-manipulable control, the hand-held system including an object attribute memory (OAM) storage, a color palette random access memory storage and a video random access memory storage, the memory storing executable instructions for:

(a)   writing up to 128 different 48-bit moving object definitions to the object attribute memory (OAM) storage;

(b)   writing up to 512 different 15-bit color values to the color palette random access memory storage;

(c)   writing at least one of moving object data and background data to the video random access memory storage; and

(d)   generating a game display that is responsive to the user-manipulable control and is based at least in part on the contents of the object attribute memory storage, the color palette random access memory storage, and the video random access memory storage,

wherein the memory stores further instructions that address the video random access memory storage at one or more addresses in an address range from 06000000h to 06017FFFh.

Claim 154 (New):   The memory of claim 153, wherein the memory stores at least one further instruction for accessing a predetermined 16-bit memory location, wherein

bit position 0 of the memory location specifies vertical blanking interval status;

bit position 1 of the memory location specifies horizontal blanking interval status;

bit position 2 of the memory location specifies vertical counter matching or non-matching;

bit position 3 of the memory location specifies whether vertical blanking interval interrupts are enabled;

OKADA et al.
Serial No. 09/722,410
Response to Office Action dated May 12, 2003

bit position 4 of the memory location specifies whether horizontal blanking interval interrupts are enabled; and

bit position 5 of the memory location specifies whether vertical counter matching interrupts are enabled.

Claim 155 (New):   The memory of claim 154, wherein the predetermined memory location is at address 004h.

Claim 156 (New):   The memory of claim 153, wherein the memory stores at least one further instruction for accessing a predetermined 16-bit memory location, wherein

bit position 3 of the memory location specifies whether vertical blanking interval interrupts are enabled;

bit position 4 of the memory location specifies whether horizontal blanking interval interrupts are enabled; and

bit position 5 of the memory location specifies whether vertical counter matching interrupts are enabled.

Claim 157 (New):   The memory of claim 156, wherein the predetermined memory location is at address 004h.

Claim 158 (New):   The memory of claim 153, wherein the memory stores at least one further instruction for accessing a predetermined 16-bit memory location, wherein

bit positions 0-2 of the memory location specify a background mode;

bit position 4 of the memory location specifies a display frame selector for selecting between two different frame buffers;

bit position 5 of the memory location specifies whether to render objects during horizontal blanking intervals;

bit position 6 of the memory location specifies a control bit for selecting between one-dimensional and two-dimensional object character mapping;

OKADA et al.
Serial No. 09/722,410
Response to Office Action dated May 12, 2003

bit positions 8-12 of the memory location specify display of four different background screens and display of moving objects;

bit positions 13-14 of the memory location select display of two different windows; and

bit position 15 of the memory location selects display of an object window.

Claim 159 (New):   The memory of claim 158, wherein the predetermined memory location is at address 0000h.

Claim 160 (New):   The memory of claim 153, wherein the memory stores at least one further instruction for accessing a predetermined 16-bit memory location, wherein

bit positions 0-1 of the memory location specify one of four background priority levels;

bit positions 2-3 of the memory location specify a character base block value;

bit position 6 of the memory location specifies a mosaic enable/disable flag;

bit position 7 of the memory location selects between a 16 color, 16 palette color mode and a 256 color, one palette color mode;

bit positions 8-12 of the memory location specify a screen base block; and

bit positions 14-15 of the memory location specify a screen size.

Claim 161 (New):   The memory of claim 160, wherein the predetermined memory location is at one or the other of address 008h and address 00Ah.

Claim 162 (New):   The memory of claim 153, wherein the memory stores at least one further instruction for accessing a predetermined 16-bit memory location, wherein

bit positions 0-3 of the memory location specify a background character mosaic horizontal size;

bit positions 4-7 of the memory location specify a background character mosaic vertical size;

bit positions 8-11 of the memory location specify a moving object character mosaic horizontal size; and

OKADA et al.
Serial No. 09/722,410
Response to Office Action dated May 12, 2003

bit positions 12-15 of the memory location specify a moving object character mosaic vertical size,

wherein the mosaic sizes specify how many dots in an original character should be replaced by a virtual character.

Claim 163 (New):   The memory of claim 162, wherein the predetermined memory location is at address 04Ch.

Claim 164 (New):   The memory of claim 153, wherein the memory stores at least one further instruction for controlling rotation and/or scaling, the at least one further instruction writing rotation/scaling data to at least one register including:

a 12-bit value specifying an x-coordinate reference starting point;

a 12-bit value specifying a y-coordinate reference starting point;

a 16-bit value specifying a distance of movement in the x-direction; and

a 16-bit value specifying a distance of movement in the y-direction.

Claim 165 (New):   The memory of claim 153, wherein the memory stores at least one further instruction for accessing a predetermined 16-bit memory location, wherein

bit positions 0-4 of the memory location specify whether to display any or all of four backgrounds and a moving object in a first display window;

bit position 5 of the memory location specifies whether to enable color special effects within the first display window;

bit positions 8-12 of the memory location specify whether to display any or all of the four backgrounds and the moving object within a second display window different than the first display window; and

bit position 13 of the memory location specifies whether to enable color special effects within the second display window.

OKADA et al.
Serial No. 09/722,410
Response to Office Action dated May 12, 2003

Claim 166 (New):   A memory for use with a hand-held system for playing video games by displaying graphical information based at least in part on user interaction provided through operation of at least one user-manipulable control, the hand-held system including an object attribute memory (OAM) storage, a color palette random access memory storage and a video random access memory storage, the memory storing executable instructions for:

(a)   writing up to 128 different 48-bit moving object definitions to the object attribute memory (OAM) storage;

(b)   writing up to 512 different 15-bit color values to the color palette random access memory storage;

(c)   writing at least one of moving object data and background data to the video random access memory storage; and

(d)   generating a game display that is responsive to the user-manipulable control and is based at least in part on the contents of the object attribute memory storage, the color palette random access memory storage, and the video random access memory storage,

wherein the memory stores further instructions that access two allocated frame buffers in the video random access memory storage to provide full motion video.

Claim 167 (New):   A memory for use with a hand-held system for playing video games by displaying graphical information based at least in part on user interaction provided through operation of at least one user-manipulable control, the hand-held system including an object attribute memory (OAM) storage, a color palette random access memory storage and a video random access memory storage, the memory storing executable instructions for:

(a)   writing up to 128 different 48-bit moving object definitions to the object attribute memory (OAM) storage;

(b)   writing up to 512 different 15-bit color values to the color palette random access memory storage;

(c)   writing at least one of moving object data and background data to the video random access memory storage; and

- 25 -

OKADA et al.
Serial No. 09/722,410
Response to Office Action dated May 12, 2003

(d)   generating a game display that is responsive to said user-manipulable control and is based at least in part on the contents of the object attribute memory storage, the color palette random access memory storage, and the video random access memory storage,

wherein the memory stores further instructions that control the alpha blending of plural display windows independently.

Claim 168 (New):   A memory for use with a hand-held system for playing video games by displaying graphical information based at least in part on user interaction provided through operation of at least one user-manipulable control, the hand-held system including an object attribute memory (OAM) storage, a color palette random access memory storage and a video random access memory storage, the memory storing executable instructions for:

(a)   writing up to 128 different 48-bit moving object definitions to the object attribute memory (OAM) storage;

(b)   writing up to 512 different 15-bit color values to the color palette random access memory storage;

(c)   writing at least one of moving object data and background data to the video random access memory storage; and

(d)   generating a game display that is responsive to said user-manipulable control and is based at least in part on the contents of the object attribute memory storage, the color palette random access memory storage, and the video random access memory storage,

wherein the memory stores further instructions that control the fade-in/fade-out of plural display windows independently.

Claim 169 (New):   A memory for use with a hand-held system for playing video games by displaying graphical information based at least in part on user interaction provided through operation of at least one user-manipulable control, the hand-held system including an object attribute memory (OAM) storage, a color palette random access memory storage and a video random access memory storage, the memory storing executable instructions for:

OKADA et al.
Serial No. 09/722,410
Response to Office Action dated May 12, 2003

(a)   writing up to 128 different 48-bit moving object definitions to the object attribute memory (OAM) storage;

(b)   writing up to 512 different 15-bit color values to the color palette random access memory storage;

(c)   writing at least one of moving object data and background data to the video random access memory storage; and

(d)   generating a game display that is responsive to the user-manipulable control and is based at least in part on the contents of the object attribute memory storage, the color palette random access memory storage, and the video random access memory storage,

wherein the memory stores further instructions that control performance of arithmetic operations on two selected surfaces and processing for up to 16 levels of semi-transparency.

Claim 170 (New):   A memory for use with an emulator for emulating a hand-held system for playing video games by displaying graphical information based at least in part on user interaction provided through operation of at least one user-manipulable control, the emulated hand-held system including an object attribute memory (OAM) storage, a color palette random access memory storage and a video random access memory storage, the memory storing executable instructions for:

(a)   writing up to 128 different 48-bit moving object definitions to an emulated object attribute memory (OAM) storage;

(b)   writing up to 512 different 15-bit color values to an emulated color palette random access memory storage;

(c)   writing at least one of moving object data and background data to an emulated video random access memory storage; and

(d)   generating a game display that is responsive to the user-manipulable control and is based at least in part on the contents of the emulated object attribute memory storage, the emulated color palette random access memory storage, and the emulated video random access memory storage,

OKADA et al.
Serial No. 09/722,410
Response to Office Action dated May 12, 2003

wherein background data is selectively written to the emulated video random access memory storage as either character data or pixel data so that backgrounds of the game display are selectively rendered in a character mode or in a bitmap mode.

Claim 171 (New):   The memory of claim 170, wherein the memory stores at least one further instruction for accessing a predetermined 16-bit memory location, wherein

bit position 0 of the memory location specifies vertical blanking interval status;

bit position 1 of the memory location specifies horizontal blanking interval status;

bit position 2 of the memory location specifies vertical counter matching or non-matching;

bit position 3 of the memory location specifies whether vertical blanking interval interrupts are enabled;

bit position 4 of the memory location specifies whether horizontal blanking interval interrupts are enabled; and

bit position 5 of the memory location specifies whether vertical counter matching interrupts are enabled.

Claim 172 (New):   The memory of claim 171, wherein the predetermined memory location is at address 004h.

Claim 173 (New):   The memory of claim 170, wherein the memory stores at least one further instruction for accessing a predetermined 16-bit memory location, wherein

bit position 3 of the memory location specifies whether vertical blanking interval interrupts are enabled;

bit position 4 of the memory location specifies whether horizontal blanking interval interrupts are enabled; and

bit position 5 of the memory location specifies whether vertical counter matching interrupts are enabled.

- 28 -

OKADA et al.
Serial No. 09/722,410
Response to Office Action dated May 12, 2003

Claim 174 (New):   The memory of claim 173, wherein the predetermined memory location is at address 004h.

Claim 175 (New):   The memory of claim 170, wherein the memory stores at least one further instruction for accessing a predetermined 16-bit memory location, wherein

bit positions 0-2 of the memory location specify a background mode;

bit position 4 of the memory location specifies a display frame selector for selecting between two different frame buffers;

bit position 5 of the memory location specifies whether to render objects during horizontal blanking intervals;

bit position 6 of the memory location specifies a control bit for selecting between one-dimensional and two-dimensional object character mapping;

bit positions 8-12 of the memory location specify display of four different background screens and display of moving objects;

bit positions 13-14 of the memory location select display of two different windows; and

bit position 15 of the memory location selects display of an object window.

Claim 176 (New):   The memory of claim 175, wherein the predetermined memory location is at address 0000h.

Claim 177 (New):   The memory of claim 170, wherein the memory stores at least one further instruction for accessing a predetermined 16-bit memory location, wherein

bit positions 0-1 of the memory location specify one of four background priority levels;

bit positions 2-3 of the memory location specify a character base block value;

bit position 6 of the memory location specifies a mosaic enable/disable flag;

bit position 7 of the memory location selects between a 16 color, 16 palette color mode and a 256 color, one palette color mode;

bit positions 8-12 of the memory location specify a screen base block; and

bit positions 14-15 of the memory location specify a screen size.

OKADA et al.
Serial No. 09/722,410
Response to Office Action dated May 12, 2003

Claim 178 (New):   The memory of claim 177, wherein the predetermined memory location is at one or the other of address 008h and address 00Ah.

Claim 179 (New):   The memory of claim 170, wherein the memory stores at least one further instruction for accessing a predetermined 16-bit memory location, wherein

bit positions 0-3 of the memory location specify a background character mosaic horizontal size;

bit positions 4-7 of the memory location specify a background character mosaic vertical size;

bit positions 8-11 of the memory location specify a moving object character mosaic horizontal size; and

bit positions 12-15 of the memory location specify a moving object character mosaic vertical size,

wherein the mosaic sizes specify how many dots in an original character should be replaced by a virtual character.

Claim 180 (New):   The memory of claim 179, wherein the predetermined memory location is at address 04Ch.

Claim 181 (New):   The memory of claim 170, wherein the memory stores at least one further instruction for controlling rotation and/or scaling, the at least one further instruction writing rotation/scaling data to at least one register including:

a 12-bit value specifying an x-coordinate reference starting point;

a 12-bit value specifying a y-coordinate reference starting point;

a 16-bit value specifying a distance of movement in the x-direction; and

a 16-bit value specifying a distance of movement in the y-direction.

OKADA et al.
Serial No. 09/722,410
Response to Office Action dated May 12, 2003

Claim 182 (New):   The memory of claim 170, wherein the memory stores at least one further instruction for accessing a predetermined 16-bit memory location, wherein

bit positions 0-4 of the memory location specify whether to display any or all of four backgrounds and a moving object in a first display window;

bit position 5 of the memory location specifies whether to enable color special effects within the first display window;

bit positions 8-12 of the memory location specify whether to display any or all of the four backgrounds and the moving object within a second display window different than the first display window; and

bit position 13 of the memory location specifies whether to enable color special effects within the second display window.

Claim 183 (New):   A memory for use with an emulator for emulating a hand-held system for playing video games by displaying graphical information based at least in part on user interaction provided through operation of at least one user-manipulable control, the emulated hand-held system including an object attribute memory (OAM) storage, a color palette random access memory storage and a video random access memory storage, the memory storing executable instructions for:

(a)   writing up to 128 different 48-bit moving object definitions to an emulated object attribute memory (OAM) storage;

(b)   writing up to 512 different 15-bit color values to an emulated color palette random access memory storage;

(c)   writing at least one of moving object data and background data to an emulated video random access memory storage; and

(d)   generating a game display that is responsive to said user-manipulable control and is based at least in part on the contents of the emulated object attribute memory storage, the emulated color palette random access memory storage, and the emulated video random access memory storage,

OKADA et al.
Serial No. 09/722,410
Response to Office Action dated May 12, 2003

wherein the memory stores further instructions that address the emulated video random access memory storage at one or more addresses in an address range from 06000000h to 06017FFFh.

Claim 184 (New):   The memory of claim 183, wherein the memory stores at least one further instruction for accessing a predetermined 16-bit memory location, wherein

bit position 0 of the memory location specifies vertical blanking interval status;

bit position 1 of the memory location specifies horizontal blanking interval status;

bit position 2 of the memory location specifies vertical counter matching or non-matching;

bit position 3 of the memory location specifies whether vertical blanking interval interrupts are enabled;

bit position 4 of the memory location specifies whether horizontal blanking interval interrupts are enabled; and

bit position 5 of the memory location specifies whether vertical counter matching interrupts are enabled.

Claim 185 (New):   The memory of claim 184, wherein the predetermined memory location is at address 004h.

Claim 186 (New):   The memory of claim 183, wherein the memory stores at least one further instruction for accessing a predetermined 16-bit memory location, wherein

bit position 3 of the memory location specifies whether vertical blanking interval interrupts are enabled;

bit position 4 of the memory location specifies whether horizontal blanking interval interrupts are enabled; and

bit position 5 of the memory location specifies whether vertical counter matching interrupts are enabled.

OKADA et al.
Serial No. 09/722,410
Response to Office Action dated May 12, 2003

Claim 187 (New):   The memory of claim 186, wherein the predetermined memory location is at address 004h.

Claim 188 (New):   The memory of claim 183, wherein the memory stores at least one further instruction for accessing a predetermined 16-bit memory location, wherein

bit positions 0-2 of the memory location specify a background mode;

bit position 4 of the memory location specifies a display frame selector for selecting between two different frame buffers;

bit position 5 of the memory location specifies whether to render objects during horizontal blanking intervals;

bit position 6 of the memory location specifies a control bit for selecting between one-dimensional and two-dimensional object character mapping;

bit positions 8-12 of the memory location specify display of four different background screens and display of moving objects;

bit positions 13-14 of the memory location select display of two different windows; and

bit position 15 of the memory location selects display of an object window.

Claim 189 (New):   The memory of claim 188, wherein the predetermined memory location is at address 0000h.

Claim 190 (New):   The memory of claim 183, wherein the memory stores at least one further instruction for accessing a predetermined 16-bit memory location, wherein

bit positions 0-1 of the memory location specify one of four background priority levels;

bit positions 2-3 of the memory location specify a character base block value;

bit position 6 of the memory location specifies a mosaic enable/disable flag;

bit position 7 of the memory location selects between a 16 color, 16 palette color mode and a 256 color, one palette color mode;

bit positions 8-12 of the memory location specify a screen base block; and

bit positions 14-15 of the memory location specify a screen size.

OKADA et al.
Serial No. 09/722,410
Response to Office Action dated May 12, 2003

Claim 191 (New):   The memory of claim 190, wherein the predetermined memory location is at one or the other of address 008h and address 00Ah.

Claim 192 (New):   The memory of claim 183, wherein the memory stores at least one further instruction for accessing a predetermined 16-bit memory location, wherein

bit positions 0-3 of the memory location specify a background character mosaic horizontal size;

bit positions 4-7 of the memory location specify a background character mosaic vertical size;

bit positions 8-11 of the memory location specify a moving object character mosaic horizontal size; and

bit positions 12-15 of the memory location specify a moving object character mosaic vertical size,

wherein the mosaic sizes specify how many dots in an original character should be replaced by a virtual character.

Claim 193 (New):   The memory of claim 192, wherein the predetermined memory location is at address 04Ch.

Claim 194 (New):   The memory of claim 183, wherein the memory stores at least one further instruction for controlling rotation and/or scaling, the at least one further instruction writes rotation/scaling data to at least one register including:

a 12-bit value specifying an x-coordinate reference starting point;

a 12-bit value specifying a y-coordinate reference starting point;

a 16-bit value specifying a distance of movement in the x-direction; and

a 16-bit value specifying a distance of movement in the y-direction.

OKADA et al.
Serial No. 09/722,410
Response to Office Action dated May 12, 2003

Claim 195 (New):   The memory of claim 183, wherein the memory stores at least one further instruction for accessing a predetermined 16-bit memory location, wherein

bit positions 0-4 of the memory location specify whether to display any or all of four backgrounds and a moving object in a first display window;

bit position 5 of the memory location specifies whether to enable color special effects within the first display window;

bit positions 8-12 of the memory location specify whether to display any or all of the four backgrounds and the moving object within a second display window different than the first display window; and

bit position 13 of the memory location specifies whether to enable color special effects within the second display window.

Claim 196 (New):   A memory for use with an emulator for emulating a hand-held system for playing video games by displaying graphical information based at least in part on user interaction provided through operation of at least one user-manipulable control, the emulated hand-held system including an object attribute memory (OAM) storage, a color palette random access memory storage and a video random access memory storage, the memory storing executable instructions for:

(a)   writing up to 128 different 48-bit moving object definitions to an emulated object attribute memory (OAM) storage;

(b)   writing up to 512 different 15-bit color values to an emulated color palette random access memory storage;

(c)   writing at least one of moving object data and background data to an emulated video random access memory storage; and

(d)   generating a game display that is responsive to said user-manipulable control and is based at least in part on the contents of the emulated object attribute memory storage, the emulated color palette random access memory storage, and the emulated video random access memory storage,

- 35 -

OKADA et al.
Serial No. 09/722,410
Response to Office Action dated May 12, 2003

wherein the memory stores further instructions that access two allocated frame buffers in the emulated video random access memory storage to provide full motion video.

Claim 197 (New):   A memory for use with an emulator for emulating a hand-held system for playing video games by displaying graphical information based at least in part on user interaction provided through operation of at least one user-manipulable control, the emulated hand-held system including an object attribute memory (OAM) storage, a color palette random access memory storage and a video random access memory storage, the memory storing executable instructions for:

(a)   writing up to 128 different 48-bit moving object definitions to an emulated object attribute memory (OAM) storage;

(b)   writing up to 512 different 15-bit color values to an emulated color palette random access memory storage;

(c)   writing at least one of moving object data and background data to an emulated video random access memory storage; and

(d)   generating a game display that is responsive to the user-manipulable control and is based at least in part on the contents of the emulated object attribute memory storage, the emulated color palette random access memory storage, and the emulated video random access memory storage,

wherein the memory stores further instructions that control the alpha blending of plural display windows independently.

Claim 198 (New):   A memory for use with an emulator for emulating a hand-held system for playing video games by displaying graphical information based at least in part on user interaction provided through operation of at least one user-manipulable control, the emulated hand-held system including an object attribute memory (OAM) storage, a color palette random access memory storage and a video random access memory storage, the memory storing executable instructions for:

OKADA et al.
Serial No. 09/722,410
Response to Office Action dated May 12, 2003

(a)   writing up to 128 different 48-bit moving object definitions to an emulated object attribute memory (OAM) storage;

(b)   writing up to 512 different 15-bit color values to an emulated color palette random access memory storage;

(c)   writing at least one of moving object data and background data to an emulated video random access memory storage; and

(d)   generating a game display that is responsive to the user-manipulable control and is based at least in part on the contents of the emulated object attribute memory storage, the emulated color palette random access memory storage, and the emulated video random access memory storage,

wherein the memory stores further instructions that control the fade-in/fade-out of plural display windows independently.

Claim 199 (New):   A memory for use with an emulator for emulating a hand-held system for playing video games by displaying graphical information based at least in part on user interaction provided through operation of at least one user-manipulable control, the emulated hand-held system including an object attribute memory (OAM) storage, a color palette random access memory storage and a video random access memory storage, the memory storing executable instructions for:

(a)   writing up to 128 different 48-bit moving object definitions to an emulated object attribute memory (OAM) storage;

(b)   writing up to 512 different 15-bit color values to an emulated color palette random access memory storage;

(c)   writing at least one of moving object data and background data to an emulated video random access memory storage; and

(d)   generating a game display that is responsive to the user-manipulable control and is based at least in part on the contents of the emulated object attribute memory storage, the emulated color palette random access memory storage, and the emulated video random access memory storage,

OKADA et al.
Serial No. 09/722,410
Response to Office Action dated May 12, 2003

wherein the memory stores further instructions that control performance of arithmetic operations on two selected surfaces and processing for up to 16 levels of semi-transparency.

Claim 200 (New):   A memory for use with a hand-held system for playing video games by displaying graphical information based at least in part on user interaction provided through operation of at least one user-manipulable control, the hand-held system including an object attribute memory (OAM) storage, a color palette random access memory storage and a video random access memory storage, the memory storing executable instructions for:

(a)   writing up to 512 different 15-bit color values to the color palette random access memory storage;

(b)   writing background data to the video random access memory storage; and

(c)   generating a display that is responsive to the user-manipulable control and is based at least in part on the contents of the color palette random access memory storage and the video random access memory storage,

wherein the memory stores further instructions that address the video random access memory storage at one or more addresses in an address range from 06000000h to 06017FFFh.

OKADA et al.
Serial No. 09/722,410
Response to Office Action dated May 12, 2003

Amendment to the Title

Please change the title of the invention to --Storage Devices for Video Game Systems and Video Game System Emulators--.